

Operational Plan: Prince William Sound Shrimp Harvest Monitoring, 2018–2022

by

Jay Baumer

and

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May 2018

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code		all standard mathematical signs, symbols and abbreviations	
deciliter	dL		AAC		
gram	g	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H _A
hectare	ha			base of natural logarithm	<i>e</i>
kilogram	kg	all commonly accepted		catch per unit effort	CPUE
kilometer	km	professional titles	e.g., Dr., Ph.D., R.N., etc.	coefficient of variation	CV
liter	L			common test statistics	(F, t, χ^2 , etc.)
meter	m	at	@	confidence interval	CI
milliliter	mL	compass directions:		correlation coefficient (multiple)	R
millimeter	mm	east	E	correlation coefficient (simple)	r
Weights and measures (English)		north	N	covariance	cov
cubic feet per second	ft ³ /s	south	S	degree (angular)	°
foot	ft	west	W	degrees of freedom	df
gallon	gal	copyright	©	expected value	<i>E</i>
inch	in	corporate suffixes:		greater than	>
mile	mi	Company	Co.	greater than or equal to	≥
nautical mile	nmi	Corporation	Corp.	harvest per unit effort	HPUE
ounce	oz	Incorporated	Inc.	less than	<
pound	lb	Limited	Ltd.	less than or equal to	≤
quart	qt	District of Columbia	D.C.	logarithm (natural)	ln
yard	yd	et alii (and others)	et al.	logarithm (base 10)	log
Time and temperature		et cetera (and so forth)	etc.	logarithm (specify base)	log ₂ , etc.
day	d	exempli gratia (for example)	e.g.	minute (angular)	'
degrees Celsius	°C	Federal Information Code	FIC	not significant	NS
degrees Fahrenheit	°F	id est (that is)	i.e.	null hypothesis	H ₀
degrees kelvin	K	latitude or longitude	lat or long	percent	%
hour	h	monetary symbols (U.S.)	\$, ¢	probability	P
minute	min	months (tables and figures): first three letters	Jan.,...,Dec	probability of a type I error (rejection of the null hypothesis when true)	α
second	s	registered trademark	®	probability of a type II error (acceptance of the null hypothesis when false)	β
Physics and chemistry		trademark	™	second (angular)	"
all atomic symbols		United States (adjective)	U.S.	standard deviation	SD
alternating current	AC	United States of America (noun)	USA	standard error	SE
ampere	A	U.S.C.	United States Code	variance	
calorie	cal			population sample	Var var
direct current	DC	U.S. state	use two-letter abbreviations (e.g., AK, WA)		
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

REGIONAL OPERATIONAL PLAN SF.2A.2018.13

**OPERATIONAL PLAN: PRINCE WILLIAM SOUND SHRIMP HARVEST
MONITORING, 2018–2022**

by
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SIGNATURE/TITLE PAGE

Project Title: Prince William Sound Shrimp Harvest Monitoring,
2018–2022

Project leader(s): Jay Baumer, Fishery Biologist III
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Division, Region and Area Sport Fish, Region II, Prince William Sound

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Field Dates: 15 April–15 September

Plan Type: Category II

Approval

Title	Name	Signature	Date
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Project leader	Brittany Blain		
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ABSTRACT

The noncommercial pot shrimp fishery in Prince William Sound, Alaska has been monitored periodically (2002–2005, 2009–current) with a permit that requires users to report the location, duration, and harvest of their sets. The objectives of this project are to continue to estimate effort and harvest of the noncommercial shrimp fisheries in Prince William Sound and to evaluate the methods used in achieving this goal.

Key words: assessment, management, permit, noncommercial, sport, personal use, subsistence, spot shrimp, *Pandalus platyceros*, Prince William Sound

INTRODUCTION

Effective January 1, 2001, the Alaska Board of Fisheries (BOF) required a shrimp permit for noncommercial users fishing for shrimp in Prince William Sound (PWS). This permit requirement was part of a shellfish proposal that addressed concerns of depressed shrimp populations throughout Prince William Sound. After the initial 4 years of data collection on PWS noncommercial shrimp fisheries (2001–2005), and a comparison of permit and annual statewide harvest survey data, it was determined permits were not necessary to manage the noncommercial fisheries. The BOF adopted a proposal to eliminate the noncommercial shrimp permit in the 2005–2006 statewide shellfish BOF meeting. In March 2009, the BOF adopted the *Prince William Sound Pot Shrimp Management Plan* establishing a guideline harvest level for shrimp taken by pot gear in the noncommercial fisheries as 60 percent of the total allowable harvest (TAH) for the area, whereas the rest of the TAH is allocated to the commercial fishery. In order to manage the noncommercial fishery allocation, it became necessary to reinstitute the permit for noncommercial fisheries beginning in 2009.

The noncommercial “shrimpers” in PWS currently fall under 2 categories: sport and subsistence. Sport shrimpers are required to have a valid sport fishing license and can shrimp in all waters of the PWS Management Area. Subsistence shrimpers are not required to have a sportfishing license although they are required to be an Alaska resident. Subsistence shrimpers are also not allowed to shrimp in the Valdez nonsubsistence area. Both user groups are required to record their harvest on a harvest record form. The PWS harvest recording form (referred to as a PWS shrimp permit) is free and available online at the Alaska Department of Fish and Game (ADF&G) website. In addition to the permit requirement, shrimp regulations were approved by the BOF to reduce the number of pots to no more than 5 per person, with a maximum of 5 pots per vessel, and established an open season from April 15 to September 15.

OBJECTIVES

PRIMARY OBJECTIVE

Estimate effort (pot-days of effort) and harvest (pounds of shrimp) for permit holders in the PWS noncommercial shrimp fisheries for 2018–2022 such that the annual estimates of total harvest will be within 10% of the true values 95% of the time.

SECONDARY OBJECTIVE

Estimate the mean weight per gallon of sport caught shrimp in Prince William Sound.

METHODS

STUDY DESIGN

Effort and Harvest (Primary Objective)

All participants in the noncommercial Prince William Sound shrimp fisheries are required to get a permit (Appendices A1 and A2) or be named on the permit of another household member. Permits will be issued online at the ADF&G online store and will need to be printed by the applicant. Permits are sequentially numbered and 2 pages in length. Identifying information (permittee's name, address, residency, driver's license number, etc.) will be completed on the permit. The permit will also provide space for recording harvest and effort data. The second page of the permit will provide information about the PWS shrimp fishery. This permit is required to be in the possession of the person working shrimp gear. Permit holders are required to record their effort (number of pots and soak time) and harvest on the permit prior to leaving the fishing site or concealing the shrimp from view and must return the permit to ADF&G by October 15 of that year or submit the information online.

As completed permits are returned, harvest and effort information will be entered into a database and marked as returned. Permit holders who do not return their permits by the October deadline will receive 2 reminder letters. Reminder letters (Appendix B1) and new copies of the permit will be mailed to nonrespondents in late November. A second reminder will be sent to first-reminder nonrespondents in early January of each year.

Reminder letters are used to ensure that all households with permits are treated equally and given the same opportunity to comply with reporting requirements prior to the next season. The permit holder's name and permit number will be printed on the reminder letter (Appendix B1). The reminder letter will also contain a copy of the harvest information portion of the permit (in case the permit holder has lost the original). A second reminder will be issued to permit holders who do not respond to the first reminder. Returned reminder letters or permits from households contacted in each mailing will be sorted into 2 categories: "deliverables" and "undeliverables." "Deliverables" are permits returned by households. "Undeliverables" are permits the U.S. Post Office was unable to deliver. Records for undeliverable permits will be marked so they will not be included in the second mailing. Records from deliverable permits will be entered into a database along with information on which mailing got the response. We recognize that some respondents will send in their original permit although they are responding to a reminder letter. Mailing will be identified by the date of response, not by the piece of paper the response is returned on.

The initial permit return rate is expected (based on the 2015–2017 average) to be approximately 61%, with an additional 21% response to the first and second mailings (Table 1). The number of issued permits is expected to be approximately 3,350 per year (2015–2017 average). Of these, approximately 2,050 permit holders are expected to comply with the October 15 reporting deadline. Accordingly, about 1,300 permit holders will be sent a reminder letter in late November and 630 permit holders will be sent a second reminder letter in early January. The estimated total number of respondents is expected to be about 3,020 per year or 90%.

Table 1.—Number of permits returned in 2002–2005 and 2009–2017.

Parameter	2002–2005				2009–2017									Average (2015–2017)
	2002	2003	2004	2005	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Estimated number of issued permits	717	1,061	1,649	2,112	2,733	3,181	3,309	3,098	3,101	3,134	3,033	3,592	3,441	3,355
Voluntary returns ^a	38%	38%	34%	45%	46%	46%	51%	49%	51%	52%	51%	67%	65%	61%
Returned after first reminder	37%	31%	39%	13%	38%	38%	27%	27%	31%	25%	27%	17%	17%	21%
Returned after second reminder	8%	18%	17%	32%	6%	6%	10%	12%	7%	9%	9%	7%	10%	9%
Returned after third reminder ^b	1%	4%												
Nonresponse	16%	9%	10%	10%	11%	11%	12%	12%	11%	14%	13%	9%	8%	10%

^a Voluntary households are those that voluntarily returned their completed permits without being mailed a reminder letter.

^b Added to the nonresponse rate when the average was calculated.

All effort and harvest information reported by permit holders who return their harvest reports before the second reminder letter will be treated as a census of “compliant” households. Information obtained from permit holders who return their permits after the second reminder letter will be treated as a sample of “noncompliant” households. Estimates of effort and harvest by noncompliant households will be obtained by first calculating the mean effort (household pot-days fished) and harvest for all households that return completed permits after the second reminder mailing. Mean estimates will be expanded to include all nonrespondents. Total estimates of effort and harvest will be obtained by summing the estimates for the noncompliant households with the corresponding information obtained from permits returned by the compliant households.

Mean Weight per Gallon (Secondary Objective)

The PWS management plan for the noncommercial shrimp pot fishery allows for harvest of 60% of the total allowable harvest (TAH). The TAH is determined using ADF&G Division of Commercial Fisheries (CF) shrimp pot surveys. Survey results are currently used to assess the relative abundance of spot shrimp in PWS, and these data, along with survey catch per unit effort (CPUE) and total catch weight, are used in combination with harvests from the commercial and noncommercial fisheries each year to model the harvestable surplus of spot shrimp in PWS. Model results provide the following year’s TAH and guideline harvest levels (GHL) for both commercial and noncommercial spot shrimp fisheries in pounds of shrimp. The reported shrimp harvest is converted from gallons of whole shrimp to pounds of shrimp using the conversion factor of 3.89 lb/gal of whole shrimp (Maria Wessel, Division of Commercial Fisheries Biologist, ADF&G, Cordova; unpublished data). This conversion factor was derived from a reevaluation of an earlier estimate and is substantially higher than the earlier conversion factor previously used in this project. To test whether the conversion factor is not changing over time or biased by CF sampling gear, Division of Sport Fish (SF) staff will opportunistically deploy noncommercial shrimp gear to estimate a conversion factor. These samples will be collected using gear commonly available to noncommercial shrimpers and will be deployed during the established season. Harvested shrimp will be placed in both 1-gallon and 5-gallon buckets and weighed. These bucket sizes represent the most common ways that noncommercial shrimpers measure their catch. On land, the 1-gallon bucket will be filled with whole shrimp and weighed. The number of shrimp in the 1-gallon bucket will then be counted and recorded. The same process will be repeated using a 5-gallon bucket that has a 1-gallon premarked line around interior perimeter of the bucket. If the observed pound-per-gallon conversion estimates obtained from this opportunistic sampling appear to substantially differ (>15%) from the current conversion factor, a more formal evaluation will be conducted to more accurately estimate harvests in pounds.

Sample Size and Precision

Effort and harvest from the 2002–2005 and the 2009–2017 shrimp permits (Table 2) was used to predict the sampling variances and related levels of relative precision.

Estimation of mean weight per gallon of sport caught shrimp will be done opportunistically and therefore has no set sample size of objective criteria.

Table 2.–Shrimp harvest and effort in Prince William Sound, 2002–2005 and 2009–2017.

Parameter estimates	2002–2005				2009–2017								
	2002	2003	2004	2005	2009	2010	2011	2012	2013	2014	2015	2016	2017
Estimated harvest (gallons)	3,870	5,819	10,706	13,312	23,383	36,541	24,659	23,235	22,105	22,919	23,669	26,423	23,606
SE (harvest)	83	132	322	386	278	193	247	182	188	253	297	160	144
95% Relative precision (harvest)	4%	4%	6%	6%	2%	1%	2%	2%	2%	2%	2%	1%	1%
Estimated effort (pot-days)	19,387	24,094	30,694	37,271	47,631	78,083	56,543	52,620	48,967	48,283	48,521	45,012	45,509
SE (effort)	187	861	1,103	1,054	1,071	805	922	668	887	714	676	335	225
95% Relative precision (effort)	4%	7%	7%	5%	5%	2%	3%	2%	4%	3%	3%	1%	1%

DATA REDUCTION FOR PRIMARY OBJECTIVE

Harvest Report Data Entry

The permit holder is encouraged to use the ADF&G online harvest reporting system which allows the user to enter each day's fishing through an easy to use web interface. The permit holder has the option of entering this information periodically throughout the fishing season or waiting until all fishing has been completed for the season to enter everything. The permit holder also has the option of hand-delivering the completed harvest reporting form to an ADF&G office or mailing to the address printed on the form. Reporting forms that come into the ADF&G offices are key-punched by staff using an internal data entry web application. The physical harvest reports are also scanned to the network as searchable PDF files for further review if necessary.

Harvest Reporting Reminders

Once the season has closed and all harvest reports received by the ADF&G office have been entered, an extract of permit holders that have not reported either online or by mail is created and will be used to populate a courtesy e-mail or reminder letters that will be sent through the U.S. Postal Service.

A courtesy e-mail will be sent to all listed nonrespondents that have provided a valid e-mail address notifying them of their noncompliance. The e-mail includes a link that takes them directly to the online reporting page.

The first reminder is a physical letter that is sent to an updated list of nonrespondents that includes a reporting form that has been preprinted with the ADF&G mailing address so that they can fill out the required information, add a stamp, and send it in. The online reporting option is also available.

The second and final reminder is the same as the first with an updated list.

Data Checking

During the season, all of the harvest reporting information that is entered through both the online and in-house systems is collected in a Microsoft¹ SQL Server database. Once the season has ended and all unprompted harvest reports have been entered, then various data checks are run to look for obvious duplicate permits. Two or more permits issued to the same household (using the head of household definition) will have one flagged as the active "Master" and the other will be referenced as the duplicate. The general process flow for determining which permit is picked as the master follows below:

- 1) If neither permit has been reported, then the most recent permit issued is the Master.
- 2) If one permit has been reported but the other(s) have not then it becomes the Master and the nonreported permit(s) are flagged as duplicate.
- 3) If both permits have been reported, then the harvest data from each is examined to see if they match or not. Usually, a mismatch happens when people report harvest on one form and report that they did not fish on the other. In that case, the permit with harvest is the Master and the "did not fish" permit is flagged as the duplicate. If the harvest data do not

¹ Product names used in this publication are included for completeness but do not constitute product endorsement.

match, then neither permit is selected as a duplicate because both have been reported with a unique harvest.

Once all duplicate permits have been identified to the best of our ability, and the reminder process has been completed, the program coordinator will determine a cutoff date for data entry. After this date, no more reports will be entered into the system and a finalized extract will be presented to the assigned biometrician in SAS format for final analysis and estimates processing.

The data will be presented in 2 tables:

- 1) PWSPMC–Contains the permit holder name, address, and other personal information as well as the final status of the permit itself (i.e., whether and how they responded).
- 2) PWSHVC–Contains any harvest or harvest effort information associated with any permits that responded with harvest or harvest effort from table PWSPMC

A variety of data queries are performed to verify data integrity before the files are passed to the Biometrician:

- 1) All records in table PWSHVC must have a matching permit number in table PWSPMC for the respective year.
- 2) All records in table PWSPMC must have a valid status value assigned (H, N, U, Z) :
(H)–Harvest (or harvest effort) received. At least one harvest record must exist in table PMCHVC.
(N)–Did not fish. Participant responded and indicated that they did not participate in the fishery. No record should exist in table PWSHVC.
(U)–Unknown. Participant responded with a blank harvest report. No record should exist in table PWSHVC.
(Z)–Did not respond. Participant never responded even after the reminder process was executed. No record should exist in table PWSHVC.
- 3) No records in PWSPMC should be flagged as “Void” or “Duplicate” in table PWSPM (raw data table).
- 4) Mailing value in table PWSPMC should reflect what the participant responded to and should be based on the last reminder sent (if any). For example, if 2 paper reminders are sent to the participant and then they respond by sending in the first mailed reminder, the mailing value in PWSPMC will be 2, not 1. Any participant that responds unprompted is assigned a mailing value of 0.
- 5) Mailing value in table PWSHVC should reflect the actual value of the associated report returned. Valid mailing values in this table are 0, 1, 2, and 4 with 4 reflecting online reporting. In the above example, the mailing value in PWSPMC will be 2, but the mailing value in PWSHVC would be 1 because that is what was physically returned. Had the participant chosen to go online to report after receiving their mailed reminders, then the mailing value in PWSPMC would still be 2 but the mailing value in PWSHVC would now be 4.
- 6) All harvest dates in table PWSHVC should be for year of permit only or 1990, which is used to reflect that the date was missing on the harvest report.

DATA ANALYSIS

Effort and Harvest (Primary Objective)

The number of permits issued (N) will be divided in 4 groups:

$$N = N_{cf} + N_{cz} + \hat{N}_{df} + \hat{N}_{dz} \quad (1)$$

where:

N_{cf} = the number of compliant households who reported fishing,

N_{cz} = the number of compliant households who reported they did not fish,

\hat{N}_{df} = The estimated number of noncompliant permits that fished, and

\hat{N}_{dz} = the estimated number of noncompliant households who reported they did not fish,

where

$$\hat{N}_{df} = [N - (N_{cf} + N_{cz})]\hat{w} \quad (2)$$

where

$$\hat{w} = \frac{n_{df}}{n_d} \quad (3)$$

and where

n_{df} = the number of noncompliant households responding to the second reminder that reported fishing,

n_d = the number of noncompliant households responding to the second reminder,

and finally, where

$$\hat{N}_{dz} = N - (N_{cf} + N_{cz} + \hat{N}_{df}). \quad (4)$$

Harvest or effort is estimated by the following procedure (with subscripts denoting parameter of estimation deleted for simplicity):

$$\hat{H} = H_{cf} + \hat{H}_{df} \quad (5)$$

where:

\hat{H} = estimated total harvest or effort,

H_{cf} = harvest or effort reported by compliant households, and

\hat{H}_{df} = estimated harvest by non-compliant households,

where

$$\hat{H} = H_{cf} + \hat{H}_{df} = \hat{N}_{df} \bar{h}_{df} \quad (6)$$

and where

\bar{h}_{df} = the mean harvest or participation per household for noncompliant households that reported fishing,

or

$$\bar{h}_{df} = \frac{(\sum_{j=1}^{n_{df}} h_{dfj})}{n_{df}}, \quad (7)$$

where

h_{dfj} = reported harvest by responding noncompliant household j , and

n_{df} = the number of noncompliant households responding to the second reminder.

Variance of \hat{H} was calculated as follows (Goodman 1960):

$$\text{var}(\hat{H}) = \text{Var}(H_{cf}) + \text{var}(\hat{H}_{df}) = 0 + \text{var}(\hat{H}_{df}) \quad (8)$$

therefore

$$\text{var}(\hat{H}) = \text{var}(\hat{H}_{df}) \quad (9)$$

and from Equation 6

$$\text{var}(\hat{H}_{df}) = \text{var}(\hat{N}_{df} \bar{h}_{df}) = \hat{N}_{df}^2 \text{var}(\bar{h}_{df}) + \bar{h}_{df}^2 \text{var}(\hat{N}_{df}) - \text{var}(\bar{h}_{df}) \text{var}(\hat{N}_{df}), \quad (10)$$

where from Equation 2

$$\text{var}(\hat{N}_{df}) = \text{var}(N\hat{w}) = N^2 \text{var}(\hat{w}), \quad (11)$$

and from Equation 3

$$\text{var}(\hat{w}) = \left[\frac{\hat{w}(1-\hat{w})}{n_d-1} \right], \quad (12)$$

and from Equation 7

$$\text{var}(\bar{h}_{df}) = \left(1 - \frac{n_{df}}{\hat{N}_{df}} \right) \frac{s_{df}^2}{n_{df}}, \quad (13)$$

for which s_{df}^2 is the sample variance for the mean reported harvest by responding noncompliant households:

$$s_{df}^2 = \frac{\sum_{j=1}^{n_{df}} (h_{dfj} - \bar{h}_{df})^2}{n_{df} - 1}. \quad (14)$$

Standard errors were calculated from the square root of the variance estimates.

Mean weight per gallon (Secondary objective)

Arithmetic mean weight per gallon and the associated variance will be calculated using standard procedures.

SCHEDULE AND DELIVERABLES

The following milestones must be met annually to keep the harvest monitoring on schedule:

Dates	Activity
Mid-March	Permit for each year updated and given to the Analyst Programmer for review.
First week of April	Permits for each year will be available online.
April 15–September 15	Shrimp will be sampled opportunistically.
Late October	Harvest and effort information from voluntary returns will be entered into the database.
Early November	Nonrespondents will be identified and the first reminder letter will be mailed.
Early December	Nonrespondents from the first mailing will be identified and a second reminder letter will be mailed.
Mid-January	Harvest and effort information from all respondents will be entered into the database.
Late January	Final checked data set, along with metadata and log of the edits will be given to project leader by late January of each year.
Mid-February	Data analysis will be completed and final complete dataset along with metadata will be sent to regional SF and CF staff.

Results from this project will be written as an ADF&G Fishery Data Series (FDS) report once every three years coinciding with the Statewide Miscellaneous Shellfish and Provisions Board of Fisheries cycle (2021, 2024, etc.).

RESPONSIBILITIES

Brittany Blain, Principal Investigator

Duties: As project leader, provides overall project supervision, prepares operational plan, and authors the FDS report.

Jay Baumer, Principal Investigator

Duties: Updates permit and manages budget.

Pat Hansen, Biometrician

Duties: Technically reviews study design, sampling methods, and data analysis of operational plan, and reviews report.

Kirk Brogdon, Programmer

Duties: Maintains data entry and data checking program and reminder mailings.

Samantha Renner, Program Technician

Duties: Data entry.

BUDGET SUMMARY

This study involves collecting data on noncommercial shrimp fisheries in Prince William Sound, which includes sport and subsistence users, and these fisheries are jointly managed by the Divisions of Sport Fish and Commercial Fisheries. For all years covered by this plan, Division of Sport Fish costs will be absorbed by the Anchorage–North Gulf Coast–PWS management budget.

Budget manager: Jay Baumer, Fishery Biologist

Line item	Category	Budget (\$K)
100	Personal Services	0
200	Travel	0
300	Contractual	1.50
400	Commodities	2.99
500	Equipment	0
Total		4.49

Project Personnel

Personnel	Job class	Months budgeted
Kirk Brogdon	Analyst/Programmer	0.0
Samantha Renner	Administrative Clerk I	0.0
Jay Baumer	Fisheries Biologist II	0.5
Total		0.0

REFERENCES CITED

Goodman, L. A. 1960. On the exact variance of products. Journal of the American Statistical Association 55:708-713.

APPENDIX A: SHRIMP PERMIT

Appendix A1.–Prince William Sound sport shrimp permit.



Alaska Department of Fish & Game
2018 Prince William Sound Sport Shrimp Permit



☐ replacement for lost original

Last Name First Name Initial ☐ Alaska Resident
☐ Non-Resident

Mailing Address

Sport Fishing License #

City State Zip Code Phone Number - - Driver's License # State

E-Mail Address

Names Of Other Household Members (this permit may only be used by the permit holder or by individuals listed here)

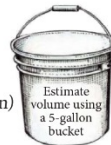
This permit is valid for the period April 15th – September 15th, 2018

- ▶ You must have this permit with you while taking shrimp in the waters of Prince William Sound (from Cape Fairfield to Cape Suckling).
- ▶ See the Southcentral Sport Fishing Regulations for complete descriptions of shrimp pot regulations (including marking requirements).
- ▶ If you share pots with a friend or relative, be careful to report each harvest on only ONE permit.
- ▶ By signing this permit you agree to all conditions and terms of this fishery. See back side of permit for additional information.
- ▶ Harvest information must be recorded in ink below prior to leaving the fishing site or concealing the shrimp from view. Please continue on another piece of paper if you need more lines to report your harvest.
- ▶ You must submit a report even if you did not fish.
- ▶ Final report must be completed online or by submitting a hard copy of the permit in person or by mail to the address on the reverse side by October 15th, 2018.

Permit Holder Signature Date

How to enter for gallons of harvested shrimp:

Example: 0.5 = Harvest ½ gallon whole shrimp (shrimp heads on)
or 0.25 = Harvest ¼ gallon whole shrimp (heads on)

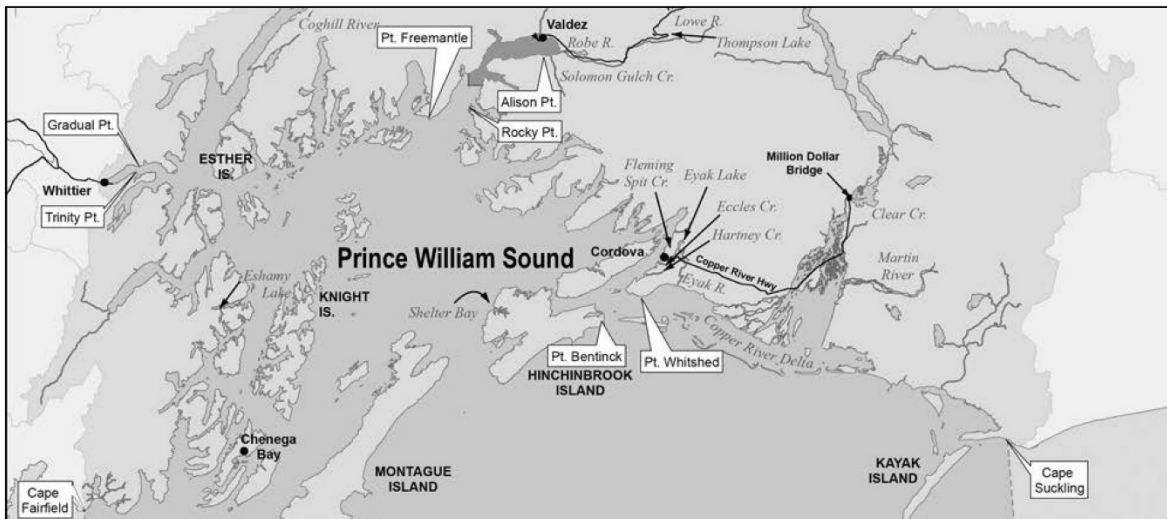


▶ Was this permit used to set shrimp pots in 2018? ☐ YES ☐ NO Number of lost shrimp pots:

DATE		LOCATION shrimp was harvested from in Prince William Sound	NUMBER OF POTS FISHED	TIME SOAKED	WHOLE SHRIMP HARVESTED
MM	DD	Examples include: specific bay, fjord, canal, arm, etc.	Pots	Hours	Gallons
1.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
11.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Report each day you shrimped and record your harvest, even if you did not catch anything.

-continued-



Summary of regulations	Sport
Alaska residency required?	No
Fishing license required?	Yes
Open season?	April 15 - September 15
Bag limit?	none
Number of pots allowed? (Pot limit reduced in 2018)	Per Emergency Order: Only 4 pots per vessel may be used to take shrimp in 2018
Open areas?	All salt waters of PWS
Can keep crab caught?	No
Can keep finfish?	No
Can keep octopus?	Yes
Can buy, sell or trade shrimp?	No

The Alaska Board of Fisheries has defined an area of Prince William Sound that is within the Valdez city limits as "non-subsistence" (described in 5 AAC 24.100 as of March 1993). See map online:

http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.nonsub_detail&area=Valdez

Escape Mechanisms

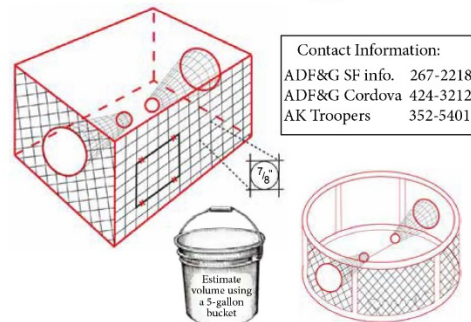
Rigid mesh pots: Each pot must have an opening at least four (4) inches square with its lower edge within six (6) inches of and parallel to the bottom of the pot. This opening may be covered with a single panel secured with no more than four (4) single loops of 100% untreated cotton twine no larger than 30-thread. Each single loop of cotton twine may contain only one knot. Cotton twine fastenings may not be looped or laced along the edges of the opening. The panel must be attached in such a manner that when the cotton twine degrades the panel will drop away leaving the opening fully exposed.

Net mesh pots and pots with no definable sides: Each pot must have an opening at least six (6) inches long on one sidewall. The opening must be within six (6) inches from the bottom of the pot. The opening must be parallel to the bottom of the pot. To lace the opening together, you must use 100% untreated cotton twine no larger than 30-thread. Knots may be used only at each end of the opening, not in the middle. The twine cannot be tied to or looped around the web bars.

If a pot is lost, the 100% cotton twine will degrade and allow shrimp to escape.

Summary Of Shrimp Pot Regulations

1. Each keg or buoy must have the name of the fisher (first initial, last name) the address, and the name or AK number of the boat used to fish the pots. Phone numbers are also recommended.
2. Two vertical sides of all shrimp pots must be entirely made of webbing big enough to allow a 7/8-inch round wooden dowel to go through without stretching or otherwise deforming the opening. The two vertical sides must touch each other. The webbing on these two sides cannot be covered by anything. The other two sides, as well as the top and bottom, can be composed of any material. The 7/8-inch size allows undersized and juvenile shrimp to escape.
3. A pot with no definable sides, such as a round pot, must have 50% of its vertical surface area covered with the 7/8-inch webbing. The other 50% of the vertical sides, as well as the top and bottom, may be composed of any material.
4. The 7/8-inch requirement does not apply to the tunnels.



Contact Information:
ADF&G SF info. 267-2218
ADF&G Cordova 424-3212
AK Troopers 352-5401

Report harvest online at <http://fish.alaska.gov/SF/PU>

Final report must be received by October 15, 2018 - even if you did not fish.

Guide to reporting accurately:

MM/DD = Month and Day shrimp gear deployed. Location = specific name of bay, canal, arm or fjord in P.W.S. Time soaked = The hours between when you dropped your gear to the time you retrieve or check your gear.

Completed permits can be mailed to:

ADF&G—Sport Fish PWS Shrimp Permits
333 Raspberry Rd.
Anchorage, Alaska 99518-1599

Harvest must be recorded as you are actively shrimping on paper permit. Final reports can be submitted to ADF&G after each trip (online) or at the conclusion of the season (September 15).

Appendix A2.–Prince William Sound subsistence shrimp permit.



Alaska Department of Fish & Game
2018 Prince William Sound Subsistence Shrimp Permit



☐ replacement for lost original

Last Name

First Name

Initial

Mailing Address

☐ Alaska Resident

City

State

Zip Code

Phone Number

 - -

AK Driver's License #

E-Mail Address

Names Of Other Household Members (this permit may only be used by the permit holder or by individuals listed here)

This permit is valid for the period April 15th – September 15th, 2018

- ▶ You must have this permit with you while taking shrimp in the waters of Prince William Sound (from Cape Fairfield to Cape Suckling).
- ▶ See the Southcentral Sport Fishing Regulations for complete descriptions of shrimp pot regulations (including marking requirements).
- ▶ If you share pots with a friend or relative, be careful to report each harvest on only ONE permit.
- ▶ By signing this permit you agree to all conditions and terms of this fishery. See back side of permit for additional information.

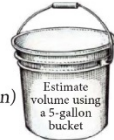
- ▶ Harvest information must be recorded in ink below prior to leaving the fishing site or concealing the shrimp from view. Please continue on another piece of paper if you need more lines to report your harvest.
- ▶ You must submit a report even if you did not fish.
- ▶ Final report must be completed online or by submitting a hard copy of the permit in person or by mail to the address on the reverse side by October 15th, 2018.

Permit Holder Signature

Date

How to enter for gallons of harvested shrimp:

Example: 0.5 = Harvest ½ gallon whole shrimp (shrimp heads on)
or 0.25 = Harvest ¼ gallon whole shrimp (heads on)



▶ Was this permit used to set shrimp pots in 2018?

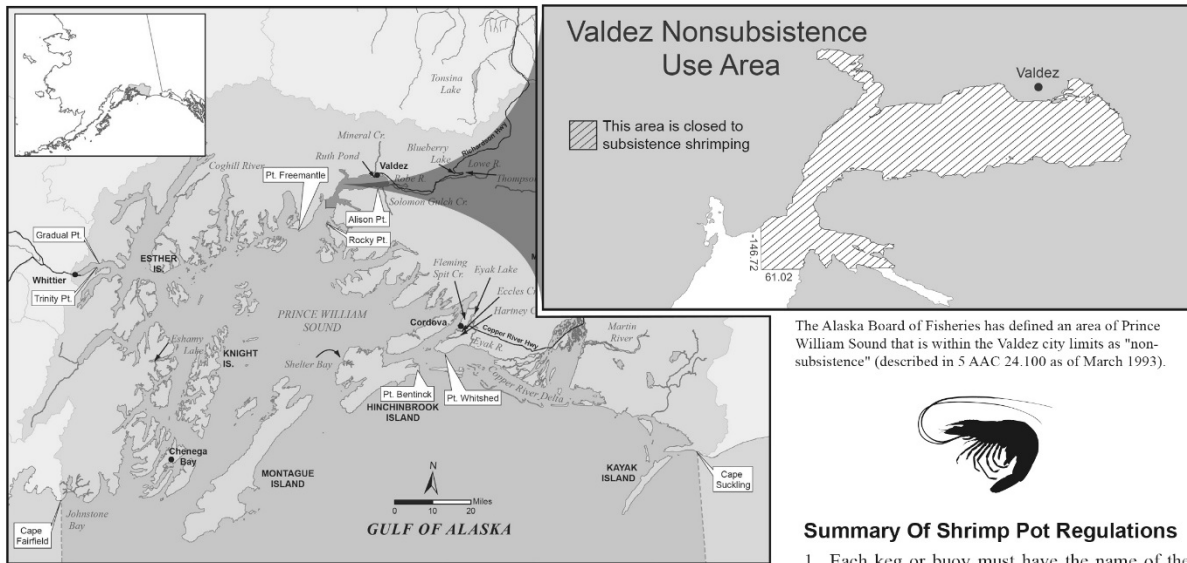
☐ YES ☐ NO

Number of lost shrimp pots:

DATE		LOCATION shrimp was harvested from in Prince William Sound	NUMBER OF POTS FISHED	TIME SOAKED	WHOLE SHRIMP HARVESTED
MM	DD	Examples include: specific bay, fjord, canal, arm, etc.	Pots	Hours	Gallons
1.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
11.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Report each day you shrimped and record your harvest, even if you did not catch anything.

-continued-



Summary of regulations	Subsistence
Alaska residency required?	Yes
Fishing license required?	No
Open season?	April 15 - September 15
Bag limit?	None
Number of pots allowed? Pot limit reduced in 2018	Per Emergency Order: Only 4 pots per vessel may be used to take shrimp in 2018
Open areas?	All salt waters of PWS
Can keep crab caught?	No
Can keep finfish?	No
Can keep octopus?	Yes
Can buy, sell or trade shrimp?	No

Escape Mechanisms

Rigid mesh pots: Each pot must have an opening at least four (4) inches square with its lower edge within six (6) inches of and parallel to the bottom of the pot. This opening may be covered with a single panel secured with no more than four (4) single loops of 100% untreated cotton twine no larger than 30-thread. Each single loop of cotton twine may contain only one knot. Cotton twine fastenings may not be looped or laced along the edges of the opening. The panel must be attached in such a manner that when the cotton twine degrades the panel will drop away leaving the opening fully exposed.

Net mesh pots and pots with no definable sides: Each pot must have an opening at least six (6) inches long on one sidewall. The opening must be within six (6) inches from the bottom of the pot. The opening must be parallel to the bottom of the pot. To lace the opening together, you must use 100% untreated cotton twine no larger than 30-thread. Knots may be used only at each end of the opening, not in the middle. The twine cannot be tied to or looped around the web bars.

If a pot is lost, the 100% cotton twine will degrade and allow shrimp to escape.

Report harvest online at <http://fish.alaska.gov/PWS>

Final report must be received by October 15, 2018 - even if you did not fish.

Guide to reporting accurately:

MM/DD = Month and Day shrimp gear deployed.

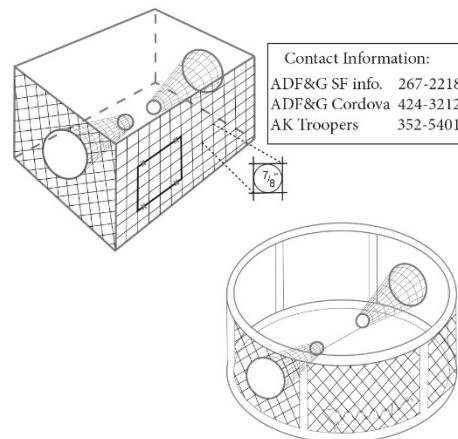
Location = specific name of bay, canal, arm or fiord in P.W.S.

Time soaked = The hours between when you dropped your gear to the time you retrieve or check your gear.

Harvest must be recorded as you are actively shrimping on paper permit. Final reports can be submitted to ADF&G after each trip (online) or at the conclusion of the season (September 15).

- ## Summary Of Shrimp Pot Regulations

1. Each keg or buoy must have the name of the fisher (first initial, last name) the address, and the name and AK number of the boat used to fish the pots. Phone numbers are also recommended.
2. Two vertical sides of all shrimp pots must be entirely made of webbing big enough to allow a 7/8-inch round wooden dowel to go through without stretching or otherwise deforming the opening. The two vertical sides must touch each other. The webbing on these two sides cannot be covered by anything. The other two sides, as well as the top and bottom, can be composed of any material. The 7/8-inch size allows undersized and juvenile shrimp to escape.
3. A pot with no definable sides, such as a round pot, must have 50% of its vertical surface area covered with the 7/8-inch webbing. The other 50% of the vertical sides, as well as the top and bottom, may be composed of any material.
4. The 7/8-inch requirement does not apply to the tunnels.



APPENDIX B: REMINDER LETTER

Appendix B1.–Prince William Sound noncommercial shrimp permit reminder letter.

December 28, 2017

To: «first_name» «last_name»
«address»
«city», «state» «zipcode»

From: Jay Baumer (Area Management Biologist) jay.baumer@alaska.gov
Brittany Blain (Assistant Area Biologist) brittany.blain@alaska.gov

Subject: 2017 Prince William Sound Area Non-Commercial Shrimp Permits

Our records show that you have not returned your **2017 Prince William Sound Shrimp permit**. Even if you think you have returned your permit, it still has not reached us. Please return the original permit, use the Harvest Report on the back of this page, OR enter your harvest data online here: <https://www.adfg.alaska.gov/sf/PU/>. If you enter your data online your permit number is: XXXXXXX. If you choose to mail it please put this sheet or your original permit in an envelope then seal the envelope, apply postage and mail to the address below.

Note that you must return the permit even if you did not fish – be sure to check the "Did Not Fish" box on the Harvest Report if this is the case. Failure to return your permit may result in denial of your shellfish harvest privileges in the future. Please turn in your report or enter it online immediately.

MAIL RESPONSES TO:
PWS Shrimp Permit
Alaska Department of Fish and Game
Sport Fish Division
333 Raspberry Road
Anchorage, AK 99518

Sincerely,

Jay Baumer

Jay Baumer, Area Management Biologist
Anchorage/Prince William Sound/ North Gulf Coast
Division of Sport Fish

-continued-

Prince William Sound 2017 Report of Shrimp Harvest

11

Number of Lost Pots: [illegible]

Alaska Department of Fish and Game
Sport Fish Division
333 Raspberry Road
Anchorage, AK 99518
Re: Permit no. «permitno»

Place
First
Class
Postage
Here

21